REMARKS

Applicants deeply appreciate the indication that Claims 1-4, 11 and 12 were not rejected on the basis of patentability.

Objection to the Drawings:

Applicants have amended FIG. 1 to show the electronic switch control 50, which is the electronic control means and switch means and the shutter 51. These terms are already used in the Applicants' Specification on Page 8, Lines 12-15, which recites: " The actions of defocussing and refocussing the electron beam 8 are activated either at will by the operator by varying the power of the focussing coils, preferably by an **electronic switch control**, or automatically by the action of a **shutter** on the output side of the X-ray beam or other external event defined by the operator." This is also described in the "Summary of the Invention" in the Applicants' Specification on Page 4, Lines 9-14, which recites: "According to a second aspect of the invention the **control means includes a switching means** to switch the electron focussing means between a plurality of focussed states, whereby in each state the X-ray source is in a corresponding discrete position on said target." Therefore, these two elements were fully disclosed in the Applicants' Patent Specification in addition to the Claims all of which also constitute the original disclosure with enough particulars that an individual with ordinary skill in the art can achieve the **claimed function** without undue experimentation. Therefore, no new matter has been added.

Rejection Under 35 U.S.C. Section 112:

Claims 1-4, 11 and 12 were rejected under 35 U.S.C. Section 112 as failing to provide enabling disclosure. In particular, these Claims are rejected for failing to disclose the shutter and control means and how they interact. It is respectfully believed that a patent application only needs to provide enough disclosure to be enabling to an individual with ordinary skill in the art. In this case, co-owned International Patent No. PCT/GB97/02580, which was published on April 2, 1998, which was disclosed in the Information Disclosure Statement filed by Applicants provides details regarding: "Integrated mechanical shutters 18 are positioned between the window 6 and the X-ray focusing elements 10, to block the emerging X-ray beam. The placement of the shutter 18 before the focusing elements 10 protects the surface of the mirror from extended radiation damage." (International Patent No. PCT/GB97/02580, WO 98/13853, Page 9, Lines 14-20). Extensive details are also provided regarding the electronic control as follows: "The cathode is at negative high voltage and the electron gun consists of a filament just inside the aperture of a Wehnelt grid which is biased negatively with respect to the filament. The electrons are accelerated towards the anode which is at ground- potential and pass through a hole in the latter and then through a long pipe (tube 2) towards the copper target 4. An electron cross-over is formed between the Wehnelt and anode apertures and this is imaged on the target by the iron-cored axial solenoid 7 which surrounds the vacuum pipe. The best electron focus is obtained when the beam passes very accurately along the axis of the solenoid. Two sets of beam deflection coils 14, which may be iron-cored, are employed in two planes separated by 30 mm, mounted between the anode of the electron gun 3 and the axial solenoid 7 to centre the beam. Between the solenoid 7 and the target 4 is an air-cored quadrupole magnet which acts as a

stigmator 19 in that it turns the circular cross-section of the beam into an elongated one. This quadrupole 19 can be rotated about the tube axis so as to adjust the orientation of the line focus. The beam can be moved about on the target surface 4 by controlling the currents in the four coils of the quadrupole 19." (International Patent No. PCT/GB97/02580, WO 98/13853, Page 11, Lines 17-36 and Page 12, Lines 1-5). Therefore, there is strong evidence showing that someone with ordinary skill in the art would have enough details from the prior art to know how to create the shutter and electronic control and determine how they interact **to achieve the function as claimed**. It is important to note that this Reference refers to the focusing means as micromirrors, bent plates arranged in combinations of elliptical or parabolic or combination, zone plates, Bragg Fresnel optics or multilayer optics (International Patent No. PCT/GB97/02580, WO 98/13853, Page 9, Lines 30-36, Page 10, Lines 1-21). This teaches away from the Applicants' Invention that requires that: "The lenses 15, 16 are preferably magnetic, but may be electrostatic to do the focusing" (Applicants' Specification, Page 8, Line 1), rather than mirrors or plates. Therefore, there is not the slightest hint or suggestion to modify this **uncited** Reference to attempt to arrive at Applicants' claimed Invention. The Supreme Court held in U.S. v. Adams, 383 U.S. 39, 148 U.S.P.Q. 479 (1966), that one important indicium of nonobviousness is "teaching away" from the claimed invention by the prior art or by experts in the art at (and/or after) the time the invention was made. It is respectfully believed that teaching away is the antithesis of the art suggesting that the person of ordinary skill go in the claimed direction and provides a per se demonstration of lack of prima facie obviousness. **In addition, it is improper to apply an "obviousness to try" standard or indulge in hindsight evaluation or reconstruction to**

attempt to arrive at the Applicants' claimed Invention. See Ecolochem, Inc. v. Southern California Edison Co., 56 U.S.P.Q.2d 1065 (Fed. Cir. 2000).

The enablement requirement of the first paragraph of 35 U.S.C. 112 requires that the patent specification enable those skilled in the art to make and use the full scope of the claimed invention without undue experimentation based on the underlying facts. Genentech, Inc. v. Novo Nordisk A/S, 42 U.S.P.Q. 2d 1001, 1004 (Fed. Cir. 1997); In re Wright, 27 U.S.P.Q. 2d 1510, 1513 (Fed. Cir. 1993); and In re Vaeck, 20 U.S.P.Q. 2d 1438, 1444 (Fed. Cir. 1991). In this case, the operation of a shutter and electronic control means do not require any undue experimentation but **someone familiar with the prior art would not have any difficulty in achieving the desired objective of using the shutter to control the emitted x-ray beam. The underlying facts specifically include what is known in the prior art.**

Therefore, it is respectfully believed that Claims 1-4, 11 and 12 overcome the rejection under 35 U.S.C. Section 112 since an individual with ordinary skill in the art, would find these Claims fully and completely enabled.

Rejection Under 35 U.S.C. Section 102:

Claim 5 was rejected under 35 U.S.C. Section 102 (e) as being unpatentable over Schardt et al. (U.S. Patent No. 6,339,635). Claim 5 is now canceled and it is respectfully believed that this rejection is rendered moot.

Claims 6-9 were also rejected under 35 U.S.C. Section 102(e). Since Claims 6-9 are now amended to depend from and contain all of the limitations of Claim 1 instead of Claim 5, then it is respectfully believed that this rejection is also rendered moot.

Claim 13 was rejected under 35 U.S.C. Section 102 (e) as being unpatentable over Schardt et al. Claim 13 is now amended to recite: "...controlling the electron focusing **means by action of a shutter** to move between a plurality of focussed states...". Therefore, this Claim, as now amended, incorporates the significant limitation of Claim 1. No new matter has been added. It is respectfully believed that all claim limitations and functional language must be considered and cannot be ignored. The Federal Circuit has long held that a key element in the claim, not found in the directly pertinent prior art, cannot be ignored in the face of the fact that it led to the successful results produced by the device. In this case, controlling the electron focusing **means by action of a shutter** to move between a plurality of focussed states **is wholly absent from Schardt et al.**

In addition, it is respectfully believed, that the United States Patent Office and the Federal Court of Appeals for the Federal Circuit, has steadfastly and properly held the view that for a proper 35 U.S.C. Section 102 rejection, a single reference, i.e., Schardt et al., must identically describe each and every element of the rejected claim or else the claim fails as a proper rejection under this statute. In this case, there is not the slightest hint or suggestion in Schardt et al. for controlling the electron focusing **means by action of a shutter** to move between a plurality of focussed states.

Therefore, it is respectfully believed that Claim 13 overcomes the rejection under 35 U.S.C. Section 102(e).

Rejection Under 35 U.S.C. Section 103:

Claim 10 was rejected under 35 U.S.C. Section 103 as being unpatentable over Schardt et al. (U.S. Patent No. 6,339,635). Since Claim 10 is now amended to depend from and contain all of the limitations of Claim 1, instead of Claim 5, then it is respectfully believed that this rejection is rendered moot.

The Applicants' Specification was also amended to eliminate minor typographical errors and to formally list the cross reference to related applications to comport with the U.S. national phase transmittal that was originally filed with this U.S. national phase patent application and previously claimed priority date.

Therefore, it is now believed that all of the pending claims in the present application, namely, Claims 1-4 and 6-13 are in condition for allowance. Favorable action and allowance of the claims is therefore respectfully requested. If any issue regarding the allowability of any of the pending claims in the present application could be readily resolved, or if other action could be taken to further advance this application such as an Examiner's amendment, or if the Examiner should have any questions regarding this amendment, it is respectfully requested that Examiner, please telephone the Applicant's undersigned attorney in this regard.

Respectfully submitted,

Date: October 29, 2003

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